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CONVERSING WITH THE BLIND-DEAF

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So long as the blind-deaf can "hear" only by means of hand pressure, is it possible for one so doubly handicapped to carry on a conversation with more than one person, or, at the most, two persons at a time? Professor Czily says that it is possible, and herewith outlines a remarkable system of "touch-talk" the perfection of which, he anticipates, will allow a roomful of blind-deaf to converse, each with the other, with as little restraint as persons in the possession of all their five senses. In addition, the Hungarian authority reviews all the principal systems of touch-talk which have ever been devised for the blind-deaf from the time of Clara Bridgman, and introduces the general American public to the German prodigy, Lorm, who invented a simplified finger alphabet for his own use and by its aid not only acquired a vast store of technical knowledge, but attained prominence as a poet and philosopher. Lorm's story is as interesting as Helen Keller's, and his achievements are as remarkable, although for some reason they have never attained the same publicity, at least on this side of the Atlantic.

ONE of the most awful instances of the cruelty of unfeeling fate is the connection of blindness and deafness in the same individual. A human being bereft of sight and hearing from birth or early childhood, and consequently dumb, has to undergo more in the midst of social life than in the loneliness of the deepest dungeon. With its utterly deficient psychic relation to the outer world, exposed as it is to innumerable and unaccountable external influences, its poor mind is in a state of constant alarm, and notwithstanding remains shrouded in darkness. Thus in comparison with it every normally developed animal appears to be a harmonious creature of a higher order.

As is well known, the marvel wrought by Samuel Gridley Howe upon Laura

Bridgman, in the former half of the last century, pointed out the way of admission into the community of life for all these outlaws of intellectual intercourse. This was done by creating speech through the sense of touch. That which Dickens, in his American Notes of 1842, related about Laura Bridgman, whom he personally saw, might have appeared to some readers to be a description in which the fancy of that celebrated novelist acted a leading part.

But now the unprecedented literary success of the autobiography of Helen Keller, our young blind and deaf contemporary, forcibly directed the general attention toward those facts, bordering upon the incredible, which yield the philanthropist the deep emotion of pathetic contentment and offer to the psy-

chologist a new field of investigation, but, above all, forever remain one of the most brilliant achievements of the educational art.

Leaving out of the question the exceptional gifts of Helen Keller, we find similar instances of successful education of the blind and deaf in increasing number everywhere. Still the quota of the unfortunate who are deprived of the sense of sight and hearing is larger than is commonly known. They can find no proper asylum, either in the institutions for the blind or in those for the deaf, since in the former success of teaching depends in a high degree upon hearing, in the latter almost entirely upon sight. Therefore, in many places the establishment of special schools for the blind and deaf is being earnestly considered. No doubt such intentions will sooner or later be fulfilled.

248 Blind-Deaf in Germany.

During the preliminary consultations held by a commission for the collecting of international statistics regarding the blind, one of the members for Germany brought forward a motion in favor of ascertaining the exact number of the *blind and deaf*. On the basis of his own inquiries, he fixed the number for Germany at 248. Supposing, then, that only a part of these poorest of the poor be really fit for education, still the organization, not of one great establishment, but of many small ones for only a few pupils each, would be necessary. One must bear in mind that intellectual intercourse with the blind and deaf depends exclusively upon the sense of touch; therefore each individual requires separate teaching, in the performing of which the temporary personal activity of one teacher is entirely engaged. For this reason I think the question *as to whether there is no possibility of some kind of common teaching* is worth consideration, at least as regards certain parts of the educational proceedings. I take the opportunity to set out my own thoughts as to this, and to draw attention to a

hitherto unknown experiment to that end.

The Methods of Howe and Prince Obolensky.

The generally adopted method of mental communication with the blind and deaf is that which Howe used in teaching Laura Bridgman. It is the "manual alphabet," devised by the Abbé de l'Épée for speech with the deaf and dumb. You may look for it in any encyclopædic dictionary. It is composed of a series of signs representing the different letters, formed by the hand and fingers. Originally destined to be received through the sense of sight, these signs are here impressed upon the palm and recognized by the sense of touch.

In addition, other no less successful methods are known; that, for instance, employed by the Prince Obolensky, in Russia, which consists in leading about of the forefinger on a plate fitted with raised letters in Latin and Braille. It has this advantage, that it gives every person who can read the capacity of communicating with the blind and deaf without previous learning. But the handling of the plate is evidently very cumbersome in the process of reading to the blind and deaf, because in such case two occupations which engage the eye of the reader in two different directions are combined simultaneously.

The impressing of common letters upon the palm seems to serve the purpose better. I know of a blind and deaf gentleman of advanced age who not long ago in this way learned by heart a story in verse running to more than a thousand lines. He declares that simple system to be the best. A procedure partly analogous, employed in some cases, consists in writing with the seized forefinger of the blind and deaf person, who, from the movement induced, recognizes the respective letters.

I further heard of two methods seldom practiced, and only remarkable for uncommon unskillfulness; they move our pity rather than arouse our interest. The



HELEN KELLER.

Whose attainments have focussed the attention of this generation upon the problem of the blind-deaf. This is probably the best-known picture of Miss Keller.

one is based on giving to different parts of the body the signification of the several letters of the alphabet: speech is communicated to the blind and deaf person by touching the parts of the body in the required order. A conversation of that kind might afford a very curious and somehow alarming aspect. The other method of satisfying the want of

mental intercourse is still more wearisome. The blind and deaf person repeats the alphabet from the beginning for each single letter of the intended word anew, to be stopped when the special letter is reached.

Recently the publication of a hitherto unknown "finger alphabet" has been effected. It has a little story of its own



FIG. 1.—DIAGRAM OF LORM'S "TOUCH-ALPHABET."

which is worth remembering as another elevating instance of a victorious struggle for the self-preservation of the human mind.

The Prodigy Lorm.

Hieronimus Lorm was a poet and philosopher of some rank in modern German literature. Like some legend, it was known of him, even in his lifetime, that he was blind and deaf, and depended for the satisfaction of all his uncommonly great mental demands upon

communication by means of a kind of finger speech which he himself had devised. He personally never gave an account of his affliction. The particulars came out some time after his death, when in the same town where he lived a fellow-sufferer succeeded in learning the finger alphabet. That gentleman, the Austrian Governmental Councillor Herr v. Chlumecky, now retired after becoming blind and deaf, in his great happiness of finding himself rescued from mental isolation, prompted his kind teacher, the

daughter of the late poet, to bring before the public the story and description of this method of speech.

Lorm became totally deaf in his sixteenth year, and not long afterwards he lost his sight forever. He felt it to be his destiny either to lose a whole world or to fight for it. But how? Laura Bridgman's salvation evidently was unknown to him. He had to provide for himself without a model—a circumstance which makes it an interesting and even momentous inquiry how he became equal to his task. Since the time he could no more hear the sound of human speech he had depended upon the observation of the movement of writing in the air and on the table. With his sight gone, too, only the sense of touch was left him for guidance, and he could not do otherwise than exchange the signs seen by the eye for such felt by the sense of touch. To that end he devised a series of different relations between his hand and fingers and the appropriate fingering of those who spoke to him.

Lorm's System of Touch-Talk.

The German alphabet can be reduced to 22 signs; these he put into two groups: one contained the letters indicated by the touch of different parts of the finger; the other those which in different ways were impressed into the palm of the hand. The diagram (Fig. 1) gives the direction for the explanation which follows.

To the first group belong, first of all, the five vowels, each of which is indicated by the touch of the finger-ends corresponding. The four fingers (from the forefinger to the little finger), when touched at the same time on the first and second joint, are further the intermediaries for the four consonants *b*, *d*, *g*, *h*. The pressing together of the fore and middle fingers forms the letter *f*; the superposition of the same two fingers the letter *p*; to seize the thumb tightly between two fingers signifies the letter *t*; the synchronous tip of two finger-ends upon the outer part of the thumb indicates *v*, of three fingers *w*.

For the palm of the hand, forming the second group, remain the following letters: *k* fashioned by the pressing of the five finger-ends into the palm; *l* by sweeping of the same across the palm; *m* by tipping three points into the palm; *n* by tipping two points; *r* is formed by a trill with the fore and middle fingers; *s* by a circle described upon the middle of the palm; *z* by a dash; *ch* by a cross. The remaining letters are not formed by themselves, but substituted; *c* by *k* or *z* (as it is occasionally pronounced in German); *q* by *ku*; *x* by *ks*.

The minute description of this finger alphabet is not given here for direct instruction. As some of the letters have no proper signs, but are only phonetically substituted, this kind of finger speech cannot be exactly orthographic, and, with all its fitness for conversation, is not to be used for primary teaching. The main point is to consider that, notwithstanding its intricacy and the apparent difficulty of its application, this speech of touch offers a thorough compensation for common speech. Lorm was able to live in society and to follow his calling. He considered himself fit to marry and to found a home, where he enjoyed the happiest companionship of his wife and children. And, moreover, he acquired a stupendous scientific knowledge.

Lately I became personally acquainted with Herr von Chlumecy, and can now judge from my own experience how easy it is to converse with him by means of this finger speech. This April, in Vienna, he attended a meeting of a committee for promoting the interests of the blind as one of its most conspicuous leading members. With the aid of his skillful lady interpreter, who writes the spoken word immediately and with astonishing celerity upon his hand, he took part in all the deliberations, and proved to be a very quick and acute debater. According to his own statement, during the last five years of his total blindness and deafness he, by the same way of communication, had absorbed a larger quantity of literature than in the long course of his former busy official life.

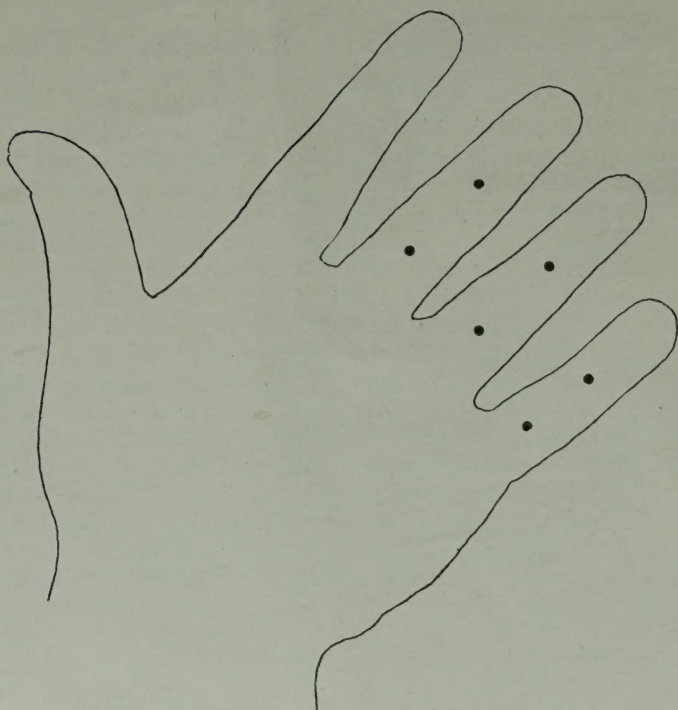


FIG. 2.—DIAGRAM OF THE BRAILLE "TOUCH-ALPHABET."

Not long ago a similar but more elaborate speech of touch was proposed by Herr Piepetz, teacher for the deaf and dumb in Graz (Styria). It consists of an entire alphabet with different signs for each letter, wherewith orthographically correct speech is secured, and a number of contractions, which makes rapid conversation possible.

I consider it to be in the highest degree remarkable that so many different ways of imparting impressions to the sense of touch should be equally and wonderfully adapted for intellectual intercourse with the blind and deaf. It is not my intention, however, merely to augment the number of the methods hitherto known by here adding the description of a new one. The real end I have in view is already mentioned, and will be later still more apparent. It is a method which, not standing behind the others with regard to quickness of mediation, surpasses all with regard to simplicity. It is long since the trial has been made of it, and the result is well established. That shall be spoken of first; afterwards I will ex-

plain the bearing of my observation as it unveiled itself to my mind.

At my instance, in 1904, a girl of 8 years of age who, a short time before, in consequence of meningitis, had become blind and deaf, had been given in charge of Mr. Adler, a teacher for the blind and the deaf and dumb in Budapest, to be educated. The mental development of that gifted child ranks among the hitherto known best results of education imparted under such peculiar circumstances; it is deserving of special description, which will be later communicated. *Contrary to my expectation, Mr. Adler did not choose the manual alphabet for the deaf and dumb for the ultimate colloquial intercourse with the child, but the point-letters of Braille, for the application of which he devised a method quite as rational as, from the beginning, surprisingly successful.*

The Braille Speech.

It is well known that the whole system of these letters is shaped through the different grouping of raised points, from

1 to 6, within the invariable borders of three points vertically and two points horizontally placed:

. .
. .
. .

Out of these every letter of all known languages, every kind of punctuation, a great number of contractions, and several special keys can be formed.

For applying as an instrument of speech with the blind and deaf child, signs of touch, which imitate the arrangement of the points of the Braille letters, Mr. Adler adduces the following reasons: The fact that in our country the manual alphabet of the Abbé de l'Épée for the deaf and dumb is almost totally supplanted by the labial speech and phonetic method; and again, the intention, to guarantee for the child a possibly large circle of social intercourse by transforming the same point-letters, which are so familiar to every schooled blind person, into a medium of speech for the sense of touch. It is carried out in the following way:

The six points of the Braille system being distributed in three pairs, one below the other, the corresponding three lines are represented by three adjoining fingers of the left hand; in our case the middle, ring, and little fingers (see diagram, fig. 2). By touching the first joint on the inner surface, the left points of the Braille letters are indicated; by touching the second joints, the right points. This relationship to the written Braille letters proves correct as long as the left hand is used. If, in any other case, the right hand were to be preferred, the second joint would, in the reversed order, indicate the left, and the first joint the right points. The absolutely isolated feeling of the respective spots of the skin secures the unerring localization of the impressions. The correctly marked letter is recognized at once.

The doubts I at first had as to the practicability of this method, my apprehension especially that, by imparting each point separately, the conversation

could not be but slow and cumbersome, soon turned out to be groundless. Both by rapid sweeping over two or three finger joints at one stroke and by simultaneous tipping with two or more suitably held finger-ends, the practiced person makes himself so quickly understood by the child that I have been the wondering witness of many a very lively and animated conversation with her.

The little Margaret Tgri, which is the name of the blind and deaf girl, communicates by direct speech with numerous persons, since but few of those who had the opportunity often to come near the lovable child withstand temptation to learn her alphabet and talk to her. She is so much accustomed to fluent speech that it is funny to watch her patronizing "grandezza," mingled with impatience, when addressed by any one less exercised. Moreover, her whole education, save for her reading, depends exclusively upon her being taught by the aid of the same speech of touch. Notwithstanding, the knowledge of that blind and deaf girl in certain branches of study would perhaps shame many a child of the same age who, possessed of sight, is taught with proper success in a public school.

Therefore it must be acknowledged that, at least in this case, the appropriation of signs of touch, in the disposition of the points of the Braille letters, for speech with the blind and deaf, proved to be excellent. As I have had experience neither about the application of the manual alphabet of the Abbé de l'Épée nor with Lorm's finger alphabet as a means of mental intercourse under similar circumstances, I never think of comparing the respective values of these two methods, nor of comparing the practicability of either with the new "Braille speech," as I may call it. But there is one thing worth considering, and that is the important fact that none but the last one is *transferable to a machine*. I soon felt induced to make the experiment.

I had a lever construction made (see the accompanying diagram, fig. 3), with

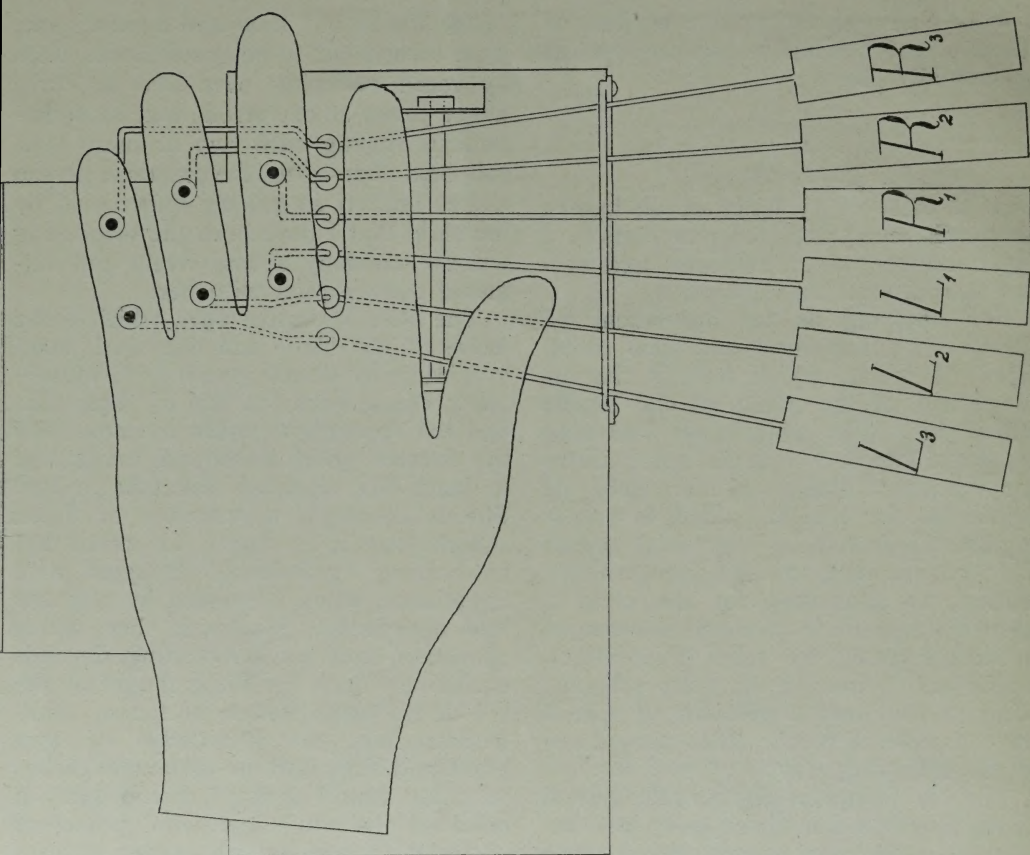


FIG. 3.—THE CZILY "TOUCH-TALK" MACHINE.

On the right are the keys pressed by the operator; on the left is the imaginary hand of a blind-deaf person receiving the impressions.

six keys having the same distribution as that on the German Braille writing machine of Picht. Each of these keys is connected with one separate peg in such a way that through pressing down the former the latter is lifted to a certain height. These corresponding six pegs are grouped in conformity with the arrangement of the six points of the Braille system, yet not in such close vicinity as on the above-mentioned machine for writing Braille letters; but, according to the purpose here in view, suited to the measures of the first and second joints of the last three fingers of the left hand.

As it was my intention to experiment previously on myself and on other grown-up people, I took those measures from the full-grown hand. To serve the pur-

pose more conveniently, a hollow cast of the left palm and fingers had been fixed to the top of the machine in such a position that each one of the last three fingers of the hand resting on it could be touched only by two of the pegs passing through proper holes in the mold when tipped up.

The two central keys, L_1 and R_1 , lift the two pegs for the middle finger, marking the upper pair of the Braille points. The adjoining two, L_2 and R_2 , those of the ring finger, mark the middle pair of the points. The two outward keys, L_3 and R_3 , lift the two pegs for the little finger, and of course mark the lowest pair of points. In consequence of this arrangement, when using the machine for speech one has to proceed in

the same way as in writing with the Picht machine.¹

To secure the correctness of the imparted impression of touch, the fingers of the mold are kept as distant from one another as possible without straining the imposed hand; also the two pegs for each finger are sufficiently distant that the synchronous tips of both are always felt as distinctly separate impressions. I ought not to forget to notice that the first model of the machine is adapted to the last three fingers in strict imitation of the original experiment with the blind and deaf girl. Unquestionably in the same way, and with equal success (considering the proportions of the finger joints, perhaps even with better), the fore, middle, and ring finger could be employed.

The results of my experiments were such that I can report about them at once in the briefest way. They proved, even in the face of my highly favorable expectations, surprisingly successful. Most of the persons put to the test were unacquainted with Braille writing, and received instructions only to qualify the impressions on the middle finger, as "1: near-far"; on the ring finger, as "2: near-far"; on the little finger, as "3: near-far." Hereby "near" (to the palm) meant the left, "far" (from the palm) meant the right Braille point.

¹ In case the previously qualified relation between the three fingers and the Braille-points, with inverted palm, should appear to be inverted too, one has to bear in mind that, corresponding to this, the two outward keys, *R-3* and *L-3*, on the machine stand for the upper two points, and the two central keys, *R-1* and *L-1*, for the lowest points of the Braille-letters.

Considering now that all those undergoing the experiment nearly unprepared, in spite of being bound to a somewhat strange method of indicating the received impressions, without exception, and as it were without hesitation, made correct statements, one cannot doubt but that the intelligent blind and deaf pupil, with his naturally enhanced concentration and minuteness of attention to impressions of touch, would soon be able to decipher with suitable quickness the point writing applied to his fingers in the manner described.

If all I report on the subject is founded upon fact, as everybody will easily find it to be, the thought of practical application now arises.

I imagine a number of sufficiently taught blind and deaf persons, each of whom holds his hand on a fitting separate hand form. Under each hand form there is a system of six properly arranged and practicable pegs connected with a central lever apparatus by electric wires. One person handling the latter sets the pegs of each system in coinciding motion simultaneously, and, being a teacher or a lecturer exercised in Braille writing, this one individual will be able to supply a multitude of blind and deaf "listeners" with mental nourishment.

My hope to see this idea realized is not strictly founded upon the application of the Braille letters for speech by a machine. Perhaps better and easier methods may still be found; happy he who will prove it. I am quite satisfied if, by having given an account of my own experiments, I merely succeed in showing a desirable goal to be within reach.

ON THE LIVING SANDS OF CERAN

BY DAVID FAIRCHILD, M. Sc.,

In Charge of Foreign Plant and Seed Introduction, Department of Agriculture

IN 1899 David Fairchild, then an agricultural explorer in the service of our government, visited Ceran, a practically uninhabited island of the Dutch East Indies—an island where the sea beach is alive and crawls, where the trees have roots that grow in the air, and the fish come out of the sea to climb the trees of the neighboring jungle.

This picture illustrates almost the first object which met Mr. Fairchild's eyes upon landing—a species of fig tree whose roots start out of its trunk at a distance of 8 to 10 feet above the ground, and then grow downward to meet the marshy soil in the form of a natural flying buttress. These trees, Mr. Fairchild says, are some 50 or 60 feet in height. Their leaves look like the leaves of a rub-

ber plant, and their juice is milky white like that of the milk weed.

"This tree," Mr. Fairchild writes, "grows so near the seashore that a species of climbing fish crawls up these roots, sometimes to a distance of 30 or 40 feet. When we landed on this island there were hundreds of these fish jumping around on the sand and climbing the roots of such trees as this, hunting for insects.

"As we set foot on this coast of wonders I turned in amazement to my companion and said, 'Why, Mr. Lathrop, the sea beach is running away!' It is no exaggeration to say that the beach was *alive* with hermit crabs. They seemed as numerous as the sands of the sea, and were of about the same color. Their

shells ranged in size from a pin's head to that of a horse chestnut, and they were in constant motion, thousands upon thousands of them, crawling up and down the blades of grass and swarming over the trunks of the trees in the beach jungle.

"These moving sands, with a background of trees whose roots—were apparently all above ground, and which were covered by tree-climbing fish, formed the most fantastic picture that it has ever been my fortune to look upon."

In the course of his explorations Mr. Fairchild has penetrated more inaccessible quarters of the earth probably than most "globe trotters." All his traveling was done in the company of a camera, and out of his enormous collection of photographs *THE VOLTA REVIEW* has received a number of the very choicest and rarest for reproduction. These photographs will appear in forthcoming numbers.



A FLYING BUTTRESS IN THE JUNGLE.

This is a natural growth of tree-roots, common to all this species of tropical fig tree. Good photographs taken in the jungle are rare, owing to the fact that the miasmatic atmosphere generally ruins the photographer's films before they can be protected.

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